AMENDMENTS

In the Claims:

1. (CURRENTLY AMENDED) A method for creating a narrow linewidth hybrid semiconductor laser comprising:

soldering a semiconductor optical gain chip to a micromachined silicon bench to create an internal element of said laser; and

coupling said optical gain chip to a ~~silicon-dioxide and silicon-oxynitride based~~ waveguide, wherein said waveguide terminates in an external feedback element, wherein said external feedback element comprises Bragg gratings and said step of coupling further comprises:

using a flip-chip aligner-bonder to horizontally align the coupling of said gain chip to said waveguide; and

using a plurality of ~~micromachined~~ stand-offs manufactured by micromachine process to vertically align the coupling of said gain chip to said waveguide.

2. (CANCELED)

3. (CURRENTLY AMENDED) The method of claim ~~2~~ 1 wherein said Bragg gratings are formed by the coupling of a first Bragg grating and a second Bragg grating to a main waveguide trunk.

4. (ORIGINAL) The method of claim 3 wherein said first Bragg grating and said second Bragg grating are formed by the periodic variation of the refractive index of said first Bragg grating and said second Bragg grating.

5. (CANCELED)

6. (PREVIOUSLY AMENDED) The method of claim 1 wherein linewidth of said hybrid semiconductor is in the tens of kHz range.

7. (CANCELED)

8. (PREVIOUSLY AMENDED) The method of claim 1 wherein said optical gain chip and said waveguide are miniature units made by a micromachine process.

9. (PREVIOSULY AMENDED) The method of claim 1 wherein said waveguide further comprises:

a first layer of silicon-dioxide;

a layer of silicon-oxinitride; and

a second layer of silicon-dioxide.

10. (CANCELED)

11. (PREVIOSULY AMENDED) The method of claim 9 wherein the interface between said first layer and said silicon-oxinitride layer and the interface between said second layer and said silicon-oxinitride layer are coated with an antireflection coating in order to further reduce loss and scattering at said interface.

12. (PREVIOSULY AMENDED) The method of claim 3 further comprises matching said waveguide with said gain chip in order to further reduce loss due to mismatch of modes of said waveguide and said gain chip.

13. (CANCELED)

14. (CANCELED)

15. (CANCELED)

Claims 16-30 (CANCELED).

31. (ADDED) The method of claim 1 wherein said step of using a plurality of stand-offs manufactured by micromachine process to vertically align the coupling of said gain chip to said waveguide aligns with an accuracy of +/- 0.2 micron.